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During the past season a number of days were spent in making an examination of a few specific areas of the Kootenai National Forest to determine the present status of forest insect conditions. Although in all instances sufficient data were obtained to tell the desired story, it is regretted that more time could not have been spent on other forest areas. It is unfortunate that at this time we are obliged to confine such examinations to timber stand where potentially serious infestations are known to exist or where it is known that serious losses have occurred. Bark beetle epidemics develop in a few years so if warning is to be given of potentially dangerous situations, it is necessary to extend our annual surveys and examinations to all areas where conditions are such that serious outbreaks could occur. A detailed account of these examinations follows:

Spread Creek

It will be recalled that in 1943 a severe epidemic of the mountain pine beetle existed in the white pine stands of the Spread Creek drainage. This outbreak was concentrated on a rather small acreage and started from a heavy white pine blow down which occurred early in 1942. To eliminate the threat of the 1943 infestation which developed from this abnormal supply of favorable host material, control measures were instituted in the spring of 1944 and 281 trees treated. On this project penetrating sprays were used for the first time as a method of bark beetle control on the Kootenai National Forest.

This project was examined in late June to determine the effectiveness of the treatment used. Mr. Gibson, of the Forest Insect Laboratory, Coeur d'Alene, Idaho, who was in direct charge of this project has already commented upon this examination in his report of July 15, 1944. It is regretted that there was a small amount of poor treating done, as in all trees that were properly treated there was a complete brood mortality. Even with this loss of brood mortality a satisfactory

reduction in the seriousness of the infestation equal to the results of most all past white pine projects, was obtained.

A second visit to this area was made on September 19th and in the examination practically the same area was covered as during the examination made in 1943. At this time 12 new (1944) attacks were recorded, which when compared to the 120 which were located on the same area last year, indicates a reduction in the severity of the infestation of some 90 percent. It is gratifying to note also that most of the new attacks were light in character so that the infestation could not be considered as aggressive in character. However, the 12 newly attacked trees represented .67 percent of the green unattacked trees inspected during the examination. Although this is not a heavy per acre infestation, it is a large percent of the green stand, as previous losses have seriously reduced the stocking of white pine.

As it is considered that this years infestation should be treated in order to bring the existing infestation back to a normal condition and to hold all benefits gained, the following action is proposed. A representative from the Coeur d'Alene laboratory will spend sufficient time in the area during the later part of May 1945, to locate and map all trees containing overwintering broods of the mountain pine beetle. When this is done, if two or three laborers can be spared from other forest activities for a few days or obtained for this special purpose, this representative will supervise and assist in the treatment of the infested trees. Although the trees are scattered it is not expected that more than 20 to 25 man days would be required for this work. Spray materials and equipment, with the exception of a few gallons of fuel oil, could be taken to the project from the Coeur d'Alene National Forest.

Although there have been severe losses of white pine in this area during the past 20 years, there is still a merchantable crop of timber. The white pine is past maturity, and the occurrence of severe bark beetle damage, indicates its susceptibility to further infestations of the mountain pine beetle. It is believed that it would be to the interest of good forestry practices to market this timber as soon as possible.

Meadow Creek - North Fork.

The timber stand of the North Fork of Meadow Creek is in a good condition as far as the present status of insect damage is concerned but during the past 15 - 20 years at least 50 percent of the original white pine volume. There are a few red tops (1943 attacks) scattered throughout this area, but in several miles of travel

which included both sides of the drainage as far as the old burn, only one new attack was recorded.

Although the present insect infestation is at a satisfactory level, this condition is only temporary, as subsequent bark beetle damage in this area is inevitable. The timber stand in question is past maturity, and as future increment will be offset by subsequent losses, it is believed that the residual timber values of this area should be salvaged as soon as possible.

Meadow Creek - South Fork.

The insect situation in this area is quite comparable to the North Fork as far as past losses of white pine are concerned. It can be rather safely said that during the past 15 - 20 years at least 50 percent of the original white pine volume has been destroyed. The lower portion of the timbered area of this drainage was cut over some few years ago, but the many snags which still stand are given reminders of the damage which had occurred prior to logging.

Throughout this timber stand there are a few red topped white pine (1943 attacks) to be seen, but no new 1944 attacks were recorded. This does not mean that there are no infested trees in the area, but only that the examination was not of sufficient intensity to assure a significant sample. In this area there is perhaps an annual loss of 1/10 of a tree per acre. Although this is not a serious infestation, there can be no assurance that the infestation will continue in its present status for any great period of time. It would seem that in the interest of good forestry this timber should be cut before the stand suffers further depletion as a result of unwarranted losses by bark beetles.

Pete Creek

It is difficult for one to appreciate the seriousness of the loss of merchantable white pine that has occurred in the Pete Creek area, unless it is seen at first hand. The standing snags make a deplorable picture, but if one will add to this the many snags which have fallen during control operations, the picture becomes still more depressing. It is difficult to estimate what the loss to the present timber crop has actually been, but one is safe in saying that since 1924 from 50 - 60 percent of the white pine volume north of Beetle Creek has been killed by the mountain pine beetle. In addition to past losses a severe infestation of this insect now threatens the residual timber stands.

In those portions of the Pete Creek area where severe losses have occurred the scattered residual stand is relatively free from mountain pine beetle infestation, although each year a few scattered

trees are killed. However in many of the spots or blocks of timber where previous losses have not occurred or at least have not been severe, a serious mountain pine beetle infestation is now present. During the examination of this area 196 newly attacked trees were recorded and it is estimated that there is perhaps a total of from 500 - 600 infested trees within the area. This years infestation occurs in groups which vary in number from 3 or 4 trees to as many as 102. The attacks are heavy, the broods are normal in their development and there are no apparent reasons to assume that next years infestation will not be equally as severe, if not more so, than the present situation.

The introduction of artificial control measures will again successfully reduce this infestation to a normal condition. However due to conditions peculiar to this situation, there is a direct economic relationship between the benefits to be derived from control and the period of time before the timber is to be logged. It must be evident to all that if the residual pine stand is to be preserved for subsequent cutting, control measures must be instituted before further loss occurs. This position remains true, regardless of the time that the timber is to be harvested, with the exception of an immediate logging in 1945. The longer the period the timber is to be carried, the greater the cost, of protecting, a steadily diminishing, already badly depleted stand of timber.

Although control measures will reduce the threat of the present infestation, it would seem that in the interests of good forestry, the area should, if at all possible, be logged immediately. A large percent of the stand has already been destroyed; the protection of the residual values from subsequent losses will be expensive, and regardless of this protection additional losses will occur which will more than offset subsequent increment. However I wish to state again that if this area cannot be logged immediately (1945) and it is desired to preserve the remaining pine stand for subsequent utilization, then control measures must be instituted in the spring of 1945.

Barron Creek - J. Neils Logging Operation.

Timber stands in the Barron Creek and other units adjacent, have been logged under a plan of sustained yield management which leaves a residual stand of merchantable timber for subsequent cutting. In this residual stand a rather severe loss of ponderosa pine resulting from attacks of the Oregon engraver beetle (Ips Oregonia) and the western pine beetle (D. Brevicomis) has occurred during the past season. Although the Oregonia engraver beetle is usually considered as a secondary forest insect, in this instance it is considered as the insect primarily responsible for this damage. It is not at all unusual for such large populations of the Oregon engraver beetle to develop in slash and cull logs left on a ponderosa pine operations that upon

emergence they attack and destroy healthy trees. Such outbreaks are for the most part short lived, and by the time the damage is noted, the danger of further loss is usually past. The attacks of these beetles are usually confined to ponderosa pine reproduction and trees up to 5 - 6 inches in diameter, however when present, the top of large trees are also attacked and killed. The base of top killed trees are often subsequently attacked and killed by the western pine beetle although in some instances such a large portion of the crown is killed, that the death of the tree follows with no further insect attack.

The western pine beetle has been responsible for some loss of ponderosa pine throughout this general area as its work is shown on old snags scattered throughout the area. For the most part this loss has been confined to the old overmature trees, of the area, and there is no evidence of an epidemic. It is believed that the present attacks of the western pine beetle, which are considered as being in abnormal numbers, are directly related to the disturbances associated with logging. It is further believed that as the trees adjust themselves to this changed forest environment, the insect infestation will return to a normal condition.

Arrangements have been made with the J. Neils Lumber Company to pick up all merchantable trees within the cut over areas that have been killed by beetles during the past season. This will eliminate the danger of the present infestation of the western pine beetle building to an epidemic status. It is trusted that this plan of salvage can be carried through, for although it is believed that this infestation will die down, it is entirely possible for the present situation to contribute to more serious losses.

Selective cutting of ponderosa pine opens a new entomological problem as Ips infestations, such as encountered on the Barron Creek area, at not at all unusual in this region. There are many instances where varying degrees of Ips damage has followed the cessation of logging, or has been associated with some sporadic cutting operation. When areas are clear cut the Ips damage is limited to reproduction and old unmerchantable wolf trees. When such areas are logged under plans of selective cutting, leaving a residual stocking of merchantable trees it can be expected that there will be more or less insect damage. This is a factor in the success of such operations which should be recognized and all possible steps taken to prevent its occurrence or minimize its seriousness.

Ips Oregoni Infestation.

Two infestation of the Oregon engraver beetle were located along the highway between Libby and Troy, Montana, and at the Troy Ranger Station air field. Both of these outbreaks were in small pine reproduction, and in both instances associated with accumulations of slash in which the infestation started.